CUSTOMER NO.: 24498                                    PATENT
Serial No.: 10/518,226                                 PU020288
Office Action dated:  09/29/06
Response dated:  11/14/06

## Remarks/Arguments

Claims 1-13 and 15-23 were examined. Applicant has amended claims 1 and 12, added claims 24-31, and has not cancelled any claims. Accordingly, Applicant presents claims 1-13 and 15-31 for consideration, of which claims 1 and 12 are independent.

Claims 1-13 and 15-23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Leitch (5,559,506) in view of Cantarella (4,417,339). Applicant submits that the rejections are moot in view of the present amendments to independent claims 1 and 12 for at least the reasons described below.

Regarding claim 1, the applied portions of Leitch and Cantarella, either alone or in combination, do not disclose or suggest, at least the following recitations from claim 1 (emphasis added):

> the parity check for each one of said N rows of said data block is performed based on a row-based parity encoding that encodes each of said N rows,
> the parity check for each one of said X columns of said data block is performed based on a column-based parity encoding, separate from the row-based parity encoding, that encodes each of said X columns, and
> identifying the at least one bad byte is based on a byte-based encoding that is separate from both the row-based parity encoding and the column-based parity encoding.

As shown by the above emphasis (underlining), claim 1 explicitly recites three encoding operations. The three encoding operations are shown in a particular embodiment described in Applicant's specification as (1) a row-based parity encoding applied to rows of a data block, (2) a column-based parity encoding applied to columns of the data block, and (3) an additional 8/10 B encoding of each byte after the two parity encoding operations.

In contrast, the combination of Leitch and Cantarella proposed by the Office Action describes only two encoding operations. The Office Action appears to combine Leitch and Cantarella by arguing that Leitch's symbols can be bytes, that Leitch's system provides error detection for the bytes, and that Leitch's system could be modified to use a code described by Cantarella to additionally provide error detection for the bits within the bytes. Even if such a combination is proper, which we do not necessarily concede, the combination only includes two encoding operations. The two encoding operations are a first for the rows of a given tier in Leitch, and a second for the columns of the given tier in Leitch. Leitch explains this at, for example, column 9, lines 28-44, which describes a row parity encoder 425 that adds S parity symbols for each row, and a column parity encoder 426 that adds T

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column parity symbols for each column. The applied portions of Cantarella describe a modified Hamming code that can correct a single bit error or detect a double bit error (see, for example, Cantarella's abstract). The combination proposed by the Office Action modifies Leitch so that Leitch's system uses one of Cantarella's codes to do the row and/or column parity encoding. Accordingly, even as combined, Leitch and Cantarella still only show two encoding operations--a row parity encoding and a column parity encoding.

Regarding claim 12, the applied portions of Leitch and Cantarella, either alone or in combination, do not disclose or suggest, at least the following recitations from claim 12 (emphasis added):

> said byte-level error detection process is based on <u>a byte-based encoding of individual bytes</u>, and
> said bit-level error detection process is based on <u>a parity encoding, separate from the byte-based encoding</u>.

As shown by the above emphasis (underlining), claim 12 explicitly recites a byte-based encoding of individual bytes, and a separate parity encoding. Claim 12 requires only two encoding operations, but one must be byte-based and another must be a separate parity encoding. These encoding operations are shown in a particular embodiment described in Applicant's specification as (1) a row-based parity encoding applied to rows of a data block and a column-based parity encoding applied to columns of the data block (although claim 12 only requires one parity encoding, two parity encodings are included in this embodiment), and (2) an additional 8/10 B encoding of each byte after the two parity encoding operations.

In contrast, the combination of Leitch and Cantarella proposed by the Office Action describes only parity encodings and does not describe an "encoding of individual bytes" (claim 12). Leitch describes parity encoding the rows of a given tier and the columns of the given tier. These are not "encoding[s] of individual bytes" (claim 12), however, Leitch does not provide parity for any given symbol (which the Office Action interprets as a byte), but only for an entire row or an entire column. The rows and columns each include multiple symbols, and thus the parity encoding of a row or a column is an encoding of multiple symbols, and not an "encoding of individual bytes" (claim 12). This can be seen by noting that the example that Leitch describes is a "simple two-dimensional parity check code" (Leitch at col. 14, line 67) that detects a single error in a row (see Leitch at col. 15, lines 18-19 and Fig. 11, explaining that the single error in row 1162 causes row 1162 to fail the parity check). Further, when two errors occur in a given row, Leitch's parity code for

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that row does not detect the errors (see Leitch at col. 15, lines 19-21 and Fig. 11, explaining that the two errors of row 1161 "offset one another to produce a correct parity check" for that row). From this example in Leitch, it is clear that Leitch is describing parity encoding that is applied to the entire row or the entire column, and is not applied to individual symbols.

For at least the above reasons, Applicant submits that independent claims 1 and 12 are patentable over the applied references. Accordingly, Applicant requests allowance of claims 1 and 12 and all claims depending from either of claims 1 or 12.

Applicant has added new dependent claims 24-31 which depend ultimately from either claim 1 or claim 12. Applicant submits that these claims are supported by the original specification and that no new matter has been added. Further, claims 24-31 are patentable over the applied references for at least the reasons discussed above with respect to claims 1 and 12, and Applicant requests allowance of claims 24-31.
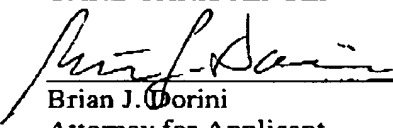
If the Examiner would find a telephone discussion to be of value in advancing the prosecution of this case, the Examiner is invited to contact the Applicant's attorney at: (609) 734-6817.

Please charge the $400 fee for the addition of 8 extra dependent claims, and any other costs that may be associated with the filing of this Amendment and Response, to Deposit Account No. 07-0832.

Respectfully submitted,

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